Year 10 Biology Topics

SB3 – Genetics
This unit covers chromosomes and the DNA Code, and studies how traits are passed on between generations.
Builds upon: ● Key principles of inheritance and DNA. ● Sexual and asexual reproduction.
Introduces: ● How gametes are produced by mitosis. ● The structure of DNA. Mutations and how genes cause genetic variation. ● Why certain characteristics are passed down through families.
Assessment: ● Year 10 transition test. ● 6-mark question on dominant and recessive traits in genetics.

SB4 – Natural Selection and Genetic Modification

The theory of evolution by natural selection, and how new species and breeds arise over time, including human evolution.

Builds upon:

- Evolution - that organisms change over time
- That Darwin came up with a theory to explain evolution

Introduces:

- Continuous and discontinuous variation due to genetic and environmental factors.
- Darwin's Theory of evolution by natural selection.
- How different methods such as genetic analysis are being used to investigate evolution.

Assessment

- **End of topic test – SB3 Genetics**
- **6-mark question on evolution of breeds and varieties**

SB4 – Natural Selection and Genetic Modification
Human impacts on genetic change, including selective breeding and genetic engineering.
Builds upon: ● Evolution - that organisms change over time ● How DNA contains instructions for the characteristics of organisms
Introduces: ● How organisms are classified. ● Selective breeding ● Genetic modification ● Antibiotic Resistance
Assessment ● **6-mark question on antibiotic resistance** ● **End of topic test – SB4 Evolution**

SB5 – Health, Disease, and the Development of Medicines

This unit defines health and studies communicable and non-communicable diseases, as well as the human immune system and barriers to infection.

Builds upon:

- The structure of bacteria
- That imbalances in diet can lead to obesity and deficiency diseases
- Healthy lifestyles

Introduces:

- How we define health
- Some pathogens and the diseases they cause
- How the spread of pathogens can be reduced or prevented
- How the body is protected against infection
- The immune system
- The development of medicines and antibiotics

Assessment

- **6-mark question on health data analysis**
- **End of topic test – SB5 Health and Disease**

SB9 – Ecosystems and Material Cycles

This unit covers the definition of ecosystems and the idea of interdependence between all organisms. It also covers the carbon, water, and nitrogen cycles.

Builds upon:

- How life on earth depends on photosynthesis in plants and algae.
- The interdependence of organisms, including food webs.

Introduces:

- How ecosystems are organised.
- How communities are affected by abiotic and biotic factors.
- How the abundance and distribution of organisms are measured.
- Parasites and mutualism.
- Human effects on ecosystems.
- The benefits of maintaining biodiversity.

Assessment

- **6-Mark question on biofuels**
- **End of topic test – SB9 Ecology**

Year 11 Biology Topics

SB6 – Plant Structures and their Function
This unit will help you learn about the process of photosynthesis and its importance, how plant structures are adapted to their functions and how water, mineral ions and sugar are transported through plants.
Builds upon: ● That plants make their own food using photosynthesis ● How light and chlorophyll are necessary for photosynthesis ● How certain plant cells are specialised and adapted to their function
Introduces: ● More about photosynthesis and how different factors affect its rate ● How the rate of water uptake by a plant is affected by different factors ● How the reactants and products of photosynthesis are transported ● More specialised cells: palisade, root hair, xylem and phloem
Assessment ● **6-Mark Question on plant adaptations** ● **End of Topic Test – SB6 Plants**

SB7 – Animal Coordination, Control, and Homeostasis

This unit introduces you to hormones, metabolic rate, the menstrual cycle, blood glucose and diabetes.

Builds upon:

- How obesity is caused
- The structure and function of human reproductive systems
- The menstrual cycle
- The structure of sperm and egg cells
- How enzymes help digest food molecules

Introduces:

- Endocrine glands
- How hormones are transported to their target organs
- How the menstrual cycle is controlled by hormones
- How hormones are used in contraception
- About diabetes and how blood glucose is controlled
- How Thyroxine and adrenaline affect the body
- What a negative feedback mechanism is

Assessment

- **Mock Exam – Paper 1 covering chapters SB1-5**
- **6-Mark Question on Thermoregulation**

SB8 – Exchange and Transport in Animals

This unit introduces you to diffusion, different kinds of respiration, how the lungs are adapted to their functions, and calculating cardiac output.

Builds upon:

- How the digestive system gets glucose and other food molecules in the blood
- How the respiratory system gets oxygen into the blood
- Diffusion
- Different animal cells and their adaptations

Introduces:

- More about diffusion, gas exchange and the surface area : volume ratio
- More about the different types of respiration
- How the lungs, heart, blood vessels and blood are adapted for their functions
- How to calculate cardiac output

Assessment

- **End of Topic Test – SB7 Homeostasis**
- **6-Mark Question on cellular respiration**